CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

Document Structure

The Forest Service has prepared this Final Environmental Impact Statement (FEIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This FEIS was finalized approximately eight months after publication of the Draft Environmental Impact Statement (DEIS). This FEIS discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters:

- **Chapter 1. Purpose and Need for Action**: The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- **Chapter 2. Alternatives to the Proposed Action**: This chapter provides alternative methods for achieving the stated purpose. These alternatives were developed based on key issues raised by the public, Forest Service employees, and other agencies. This discussion also includes design criteria for alleviating potential negative effects. Finally, this section provides summary tables of the environmental consequences associated with each alternative.
- **Chapter 3. Affected Environment and Environmental Consequences**: This chapter describes the potential environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area.
- **Chapter 4. Consultation and Coordination**: This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement. It also contains the response to comments section.
- **Appendices:** The appendices provide more detailed information to support the conclusions presented in the environmental impact statement. Included is a glossary that defines abbreviations, acronyms, and terms used. Most abbreviations are defined when first used in the text and most terms are defined in the glossary to avoid interrupting the text.

Additional documentation, including more detailed analyses of project area resources, may be found as exhibits in the project planning record called the Project File, located at the Tally Lake Ranger District in Whitefish, Montana. Project file exhibits are often referenced in this FEIS and are referred to simply as "Exhibit T-1," as an example.

Differences Between the DEIS and FEIS

Chapter 1 of the FEIS differs from the same chapter in the DEIS in the following ways:

- The need indicator for the purpose and need statement "Provide habitat for wildlife species" was changed from *percent of analysis area in elk hunting season security area* in the DEIS to *percent of elk analysis units comprising more than 30 percent elk hunting season security* in the FEIS.

- The length of time over which the Proposed Action or one of its action alternatives would be implemented was clarified to be approximately 10 years and occurring in a sequential manner, not all at once.
- The description of dispersed and aggregated retention prescriptions was clarified.
- The FEIS describes the process that would be used to retain downed trees on roads to be reclaimed that pass through or are adjacent to old growth habitat.
- The dates that snowmobile access is allowed on roads closed year-long to motorized vehicles was changed from December 1 to May 15 (from May 14 in the DEIS).
- The method that pools would be constructed in lower Logan Creek was described.
- A paragraph describing shrub planting across 100 to 500 acres of timber harvest units proposed by the Proposed Action was inadvertently omitted from the DEIS and was included in the FEIS.
- The public involvement process since publication of the DEIS was updated in the FEIS.
- The wildlife security issue was clarified in the FEIS.
- The issue indicator for Wildlife Security was changed from *number of elk habitat analysis units with less than 30 percent elk hunting season security area* in the DEIS to *percent of elk habitat analysis units with less than 30 percent elk hunting season security area* in the FEIS.
- Clarification was made in the FEIS about where vegetation activities are proposed in relation to late-seral/structural stage forests. Also clarified was the fact that current old growth stands would be harvested only if mortality levels at the time of unit layout are so high that the stands are no longer functioning as old growth, if adequate snags can be retained, and if insect infestation within them poses a threat to adjacent stands.
- The FEIS stated that it would be advantageous to increase average patch size of all seral stages as well as increase perimeter and reduce the total number of patches.
- A new issue indicator was added in the FEIS for evaluating the alternatives in terms of the Road Access issue; it is *percent of drivable roads that are open to public motorized use.*

Background

The proposed activities for the Logan Creek Ecosystem Restoration Project are based upon findings from a watershed-level assessment conducted by an interdisciplinary team (IDT). This team includes the same members who have put together this FEIS and is composed of a variety of specialists (wildlife biologist, soil scientist, fisheries biologist, hydrologist, fire and fuel specialists, recreation specialist, landscape architect, transportation planner, archeologist, and silviculturist). The assessment of the project area put forth no decisions, but was conducted to better evaluate:

- the historical condition of the resources of the area prior to European settlement (i.e., late 19th century);
- the existing condition of key resources within the area on a broader, landscape scale; and

- a desired future range of conditions using public involvement, current management direction, regulations, and laws within a historical context, including information currently being evaluated on larger ecological scales.

As the team conducted the assessment, pertinent findings of the Interior Columbia Basin Ecosystem Management Project were integrated, as appropriate (U.S. Department of Agriculture and U.S. Department of Interior 2000). In addition, public comments and concerns were incorporated into the assessment process. The Logan Creek "Summary of Findings from the Ecosystem Assessment at the Watershed Scale," completed in September 2001, is available in Exhibit A-1. According to findings in the assessment, several management actions appear appropriate at this time. A Proposed Action was then developed through interdisciplinary consideration of resource conditions and public desires.

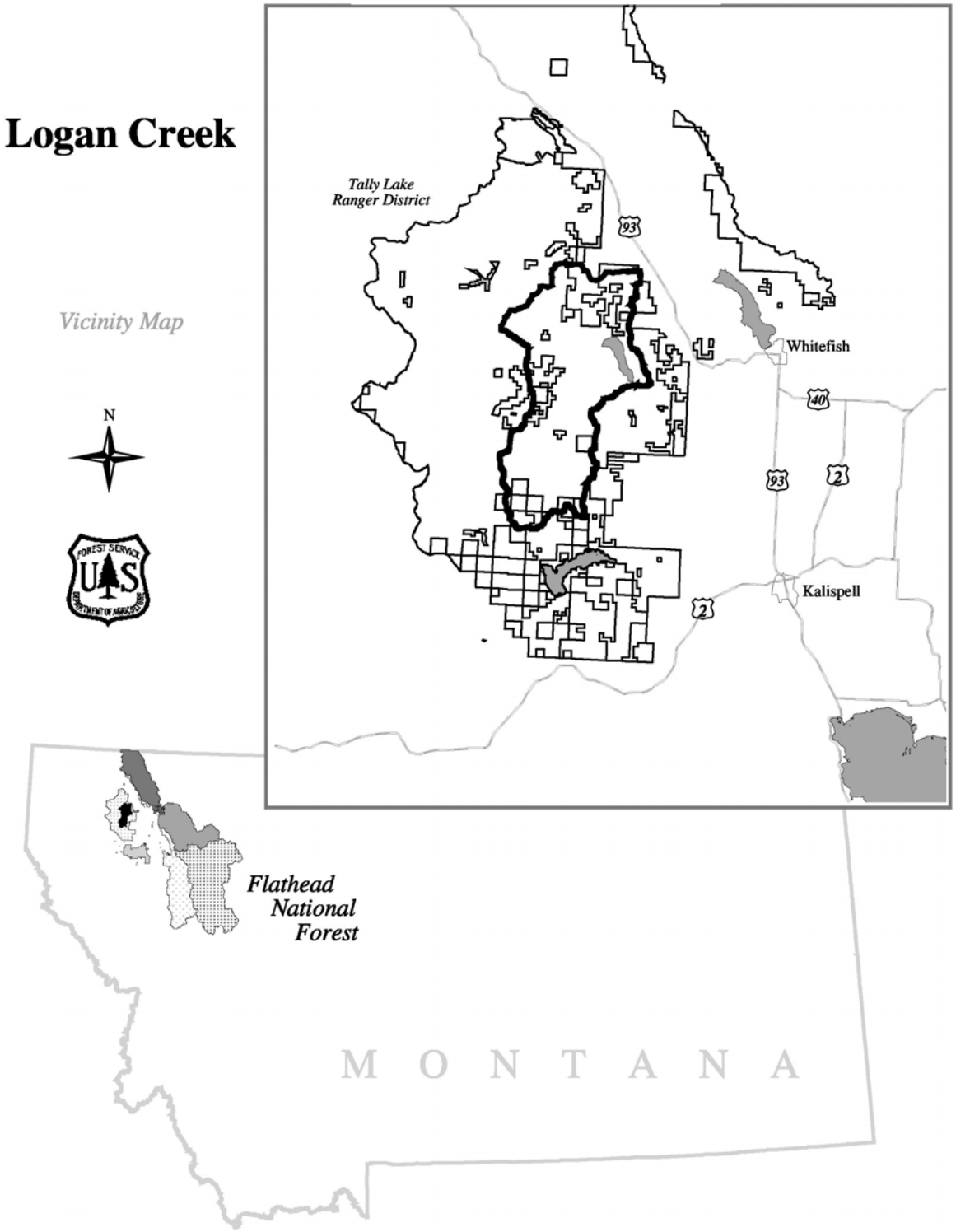
The Logan Creek Ecosystem Restoration Project area is located in Flathead County and is approximately 15 air miles west of Whitefish, Montana (refer to Vicinity Map, Figure 1-1). The area is approximately 61,000 total acres in size with about 48,000 of this managed by the Tally Lake Ranger District, headquartered in Whitefish. The remainder of the project area is comprised of approximately 3300 acres of State of Montana land, 3600 acres of Plum Creek Timber Company land, and 6100 acres of other private land. **Activities proposed in this DEIS are only for implementation on National Forest System land.** The analysis area is located in T32N, R24W, Sec. 35; T31N, R25W, Sec. 24, 25; T31N, R24W, Sec. 1-3, 9-17,15-36; T31N, R23W, Sec. 4-9, 16-21, 28-33; T30N, R23W, Sec. 4-9, 17-19, 30-31; T30N, R24W, Sec. 1-5, 8-17, 20-36; T29N, R24W, Sec. 1-24, 27-30, 32; and T29N, R23W, Sec. 6-7. A map of the analysis area with prominent landscape features, such as roads and streams, is shown in the Alternative B Proposed Vegetation Treatment map, Figure 1-2.

The activities proposed in the alternatives are consistent with the Forest Service Natural Resource Agenda and the Northern Region Overview (USDA Forest Service, 1998). This agenda is the blueprint for meeting the goals in the Forest Service's strategic plan required under the Government Performance and Results Act of 1993. The agenda focuses attention on critical issues facing watershed health and sustainable forest ecosystem management. The Natural Resource Agenda issues addressed in the Logan Creek Ecosystem Restoration Project are: potential for unnaturally severe wildland fire; changes in vegetation; loss of species viability; degradation of aquatic ecosystems, road condition, invasion of exotic species, air quality, and values at risk on private land. A detailed discussion of the Natural Resource Agenda can be found on the Internet at: http://www.fs.fed.us/news/agenda with access available at most public libraries. The Northern Region Overview implements the Natural Resource Agenda specific to Region One of the Forest Service.

Purpose & Need for Action

The Flathead National Forest Land and Resource Management Plan (USDA Forest Service 1986) and its subsequent amendments provide the basis for managing the Flathead National Forest. A variety of current conditions, as determined by an ID Team of specialists on the Tally Lake Ranger District and presented in the watershed analysis mentioned above, provide the purpose and need for management action in the Logan Creek area. The purpose of the

Figure 1-1. Project Vicinity Map



proposed management action is outlined in the following bullet statements with a more elaborate discussion of each need after the statements. Each discussion also includes a *need indicator* that will later be used to compare alternatives. The need indicators may be presented in unfamiliar terms that are defined in the glossary in Appendix A.

- Reduce hazardous fuel to varying degrees across the landscape. Create and expand fuel reduction zones throughout the landscape, well-positioned to improve the defensibility of values to protect.

- Restore or maintain a pattern of vegetative cover types and structure classes across the landscape similar to that expected under historical disturbance and succession regimes.

- Reduce the vulnerability of the forest to large scale, dramatic disturbances from insects, diseases, or unwanted wildland fire, both on a stand basis and across the landscape.

- Provide an ecosystem that sustains habitat for wildlife species, including their needs for foraging, movement, and security.

- Improve water quality and reduce sediment delivery.

- Improve aquatic habitat to enhance the recreational fishery.

- Provide economically viable removal of commercial timber that would accomplish management needs and contribute to the social and economic needs of our local communities.

Reduce Hazardous Fuel

There is a need to treat overstocked timber stands with current or near-term anticipated high fuel accumulations that are at risk for high intensity, uncharacteristic wildland fires and associated post-fire effects. Re-establishing vegetative conditions to reintroduce low- to moderate-intensity fire regimes would begin to increase the fire survivability of fire-resistant species, protect values such as cultural resources, water quality, adjacent private property, and recreation areas from catastrophic effects of wildland fire. Exclusion of fire for the past 60 years along with other management practices has contributed to a dramatic change in the fuel loads.

Need Indicators:

- Acres of fuel models 8, 8/10, or 10 converted to fuel models 2/5, 5, or modified 8;
- Total effectiveness rating;
- Acres treated using methods that include salvage harvest in condition class 2 for the mixed severity 2 and stand replacement fire regimes. (Please see the Fire and Fuels section of Chapter 3 in this EIS for discussions of fuel models, effectiveness ratings, condition classes, and fire regimes.)

Restore Vegetative Cover Types and Structure Classes

There is a need to reduce forest stand density, alter species composition in favor of western larch and ponderosa pine, and move vegetative growth stages closer to the Historical Range of Variability to improve long-term forest conditions. The exclusion of fire for the past 60 years along with other management practices has resulted in stands with a higher number of trees, stands with greater amounts of Douglas-fir, and fewer numbers of stands in the smaller size classes than existed historically. There is also a need to restore the size of patches of cover types and structure classes to the larger patch size that existed historically. Creating landscape conditions that are closer to the Historical Range of Variability is desirable because flora and fauna have adapted to habitat and disturbance conditions of previous millennia. Increased deviation from these conditions may result in increased habitat loss for particular species, change in fire regime and risk of catastrophic wildland fire leading to loss of important ecosystem components, and other undesirable ecological change.

There is a need to maintain current growth, vigor, and crown conditions in the small tree growth stages of overstocked stands for future composition, density, and structure considerations. Hundreds of acres have been harvested in the past, successfully regenerated with seedlings, and subsequently overstocked with natural regeneration. Such overstocking will lead to slow growth of individual trees, poor stand vigor, domination by one or two species, and susceptibility to insects, disease, and wildland fire. Mechanical thinning can maintain growth and vigor on remaining trees and control species composition to result in future stands that meet management objectives.

The need to move the patch size and landscape pattern of these patches toward what existed naturally and historically is based on the concept that all species, flora and fauna, evolved under conditions that existed historically. If landscapes are managed in a manner that approximates historical structure, composition, and pattern, there is a better chance to maintain viable populations of all indigenous species. The size of patches, which are defined as similar contiguous forest areas created by a disturbance, in Logan Creek prior to the advent of fire suppression and timber harvest ranged from 50 to 600 acres. These patches were generally created by fire, and occasionally by a wind event. Patch size today in the seedling/sapling size class averages 50 acres. Patches of pole-sized trees averages about 119 acres and old forest type patches average about 425 acres in size. Placing the proposed treatment areas adjacent to the older ones can enlarge small patches created through past timber harvest.

Need Indicators:

- Total acres of regeneration harvest and commercial thinning using methods that include salvage harvest.
- Average patch size by seral stage.

Reduce the Vulnerability of the Forest to Disturbances

There is a need to improve the health of individual trees. The Douglas-fir bark beetle is killing many of the mature Douglas-fir stands, and Douglas-fir cover types occur on a large portion of the watershed. Fire suppression has allowed these stands to become overstocked

with more trees in a given area than the area can sustain in a healthy condition. Trees compete for resources such as sunlight, minerals, and moisture. Thick stands of conifers often become weakened from competition, reducing a tree's natural ability to defend itself from bark beetles. The occurrence of root disease in these Douglas-fir stands also contributes to their general decline and susceptibility to insect attack. Converting some of these stands to species resistant to Douglas-fir bark beetle and root disease (i.e., western larch, lodgepole pine, and ponderosa pine) can reduce the spread of beetles across the landscape and create a stand for the future less likely to experience mortality from these two agents. Thinning healthy stands that are not displaying symptoms of the root disease *Armillaria* allows residual trees the opportunity to release and grow more rapidly. Longer-lived seral species such as larch and ponderosa pine may regenerate, making the stand more likely to develop into an old forest condition. Timber harvest methods used to achieve this purpose would include salvage of dead and dying timber.

Need Indicators:

- Percentage of National Forest System land at moderate risk to Douglas-fir bark beetle.
- Percentage of National Forest System land at high risk to Douglas-fir bark beetle.

Provide Habitat for Wildlife Species

There is need to move the landscape toward historical vegetative conditions caused by wildland fire to which local wildlife species are adapted. The pre-settlement landscape typically had extensive amounts of snag and downed woody material, a variation of stand ages and tree densities, and forested connectivity. Some management actions can be taken so the landscape will more closely resemble historical conditions. Stands in the Logan Creek drainage that have potential for goshawk or flammulated owl habitat can be opened through understory treatments such as commercial thinning or fuel reduction activities to improve habitat value and reduce risk of stand-replacing fire, as long as this is balanced with other species' needs for thermal cover. Areas in ungulate summer range should be burned to slow conifer encroachment and improve availability and nutritional qualities of browse. Connectivity and forage values can be improved by planting trees or shrubs along riparian areas. Old growth habitat has been recently lost in the Logan area due to epidemic levels of Douglas-fir beetles. Efforts to reduce the spread of this beetle may enhance the resiliency of some old growth habitats.

There is a need to improve wildlife security across much of the Logan drainage. For species like elk and deer, secure habitat during the hunting season is now limited to some larger blocks (>250 acres) of contiguous cover that are over a half-mile from roads open during hunting season, which are called "elk hunting season security areas." Only one of these security areas is closed to motorized public access throughout the year. Closing some trails to motorized vehicles during hunting season and changing some roads from open year-round to open seasonally or closed yearlong would considerably improve wildlife security.

Need Indicators:

- Acres of understory treatment in potential goshawk or flammulated owl habitat;
- Acres burned in ungulate summer range to slow conifer encroachment;
- Percent of elk analysis units comprising more than 30% elk hunting season security.

Improve Water Quality and Reduce Sediment

There is a need to reduce the amount of surface water and sediment routed to the tributaries and mainstem of Logan Creek from roads. Bringing system roads up to the Montana Best Management Practice standards (BMPs) can reduce sediment by as much as 80 percent when properly applied. Additional road drainage (both cross drain culverts and drain dips) also helps reduce the amount of water routed to streams. Implementation of BMPs also creates a more natural drainage pattern across forested hillsides, thereby reducing potential for erosion within stream channels.

Roads can be relocated or reclaimed where they are not necessary for future management or are located on sensitive or wet landtypes. This in turn can decrease peak flows from runoff events and reduce sediment delivery to streams.

Need Indicators:

- Number of stream crossings improved by BMPs or through road reclamation.

Improve Aquatic Habitat and Enhance Fisheries

Brook trout, rainbow trout, and lake trout have established healthy populations in the Logan Creek watershed and provide a popular recreational fishery. Although it may not be apparent to the casual observer, the quality of fish habitat in the Logan Creek drainage has declined. Early 20th century log drives substantially reduced pool habitat in lower Logan Creek. Roadbuilding and timber harvest primarily associated with management in the 1950s and '60s have contributed to sediment deposition in streams. Upgrading forest roads to BMP standards would reduce the risk of sediment and excess runoff entering streams during storm events, thereby protecting fish habitat. Some road culverts throughout the watershed are barriers to fish migration and prevent fish from utilizing high-quality habitat. Restoring and protecting habitat would benefit fish species and other aquatic organisms, therefore improving fishing opportunities.

Need Indicators:

- Number of culverts improved to allow increased fish habitat conditions.

Provide Economically Viable Removal of Timber

There is a need to maintain forests in a sustainable condition because it improves the social and economic environment of the local community. Timber production and associated contracted activities occurring on the Tally Lake Ranger District contribute to the local economy. The level of timber harvest directly affects current income, employment, and county revenues. The Forest Plan designates much of the Logan Creek area as emphasizing cost-efficient production of timber while protecting the productive capacity of the land and timber resource (please see Appendix B).

Most of Flathead County is comprised of federal lands. Kalispell, Columbia Falls, and Whitefish are considered "Timber Specialized Communities" (US Department of Agriculture

and Department of Interior 1998) and much of the timber processed in the county comes from federal lands. Jobs and income associated with timber harvest and related activities on the Flathead National Forest can help support local economies.

Need Indicators:

- Estimated board feet of timber proposed for harvested.

Proposed Action

The action proposed by the Forest Service to meet the purpose and need includes timber harvest, non-commercial thinning, prescribed burning, reclaiming and/or rehabilitating some roads, changing road and trail access, placing logs and creating pools in streams, and planting shrubs and trees. The action was developed as a strategy to reduce fuels, reduce tree mortality due to insect infestations, move ecosystems toward more natural disturbance patterns, increase individual tree vigor, improve recreational fisheries, improve wildlife habitat, reduce road maintenance costs, and improve water quality.

Implementation of the Proposed Action or an alternative to the Proposed Action would occur over the course of approximately 10 years. Timber harvesting activities would occur in a sequential manner, not all at once. The Record of Decision signed as a result of this EIS process would direct activities for the entire implementation period; however, activities in later years may need to be reviewed for compliance with applicable laws if conditions or policy change. A map and explanation of the planned implementation is in the Project File under Exhibit E-1.

This action responds to the goals and objectives outlined in the Forest Plan and helps move the project area towards desired conditions described in that plan. The Forest Plan embodies the provisions of the National Forest Management Act (NFMA), its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Flathead National Forest. This Final EIS tiers to the Forest Plan Final EIS and Record of Decision, in compliance with 40 CFR 1502.2. The Forest Plan uses "management areas" (MAs) to guide management of National Forest System lands. Each MA provides a unique combination of activities, practices, and uses. Activities would take place in the Logan Creek area within Management Areas 2A, 2C, 4, 5, 7, 12, 13, 13A, 15, and 15B, as described in the Forest Plan (2001 version) on pages III-5 through III-11, III-17 through III-30, III-52 through III-66, III-70 through III-76, and III-82 through III-88. Descriptions of the goals and objectives of these management areas are described in Appendix B of this FEIS.

Vegetation Management Proposals *(refer to Vegetation Plan Maps, Figures 1-2 and 1-3)*

Harvest Unit Prescriptions. Prescriptions of variable levels of tree retention are proposed to meet the multiple ecological objectives that were described in the purpose and need statements. Two general categories of retention prescriptions for harvest units are proposed:

1. **Dispersed Retention**, which is harvest that retains individual trees dispersed across the entire unit at one of three density levels:
   - *Light dispersed retention*: a relatively low density of trees would be retained across the harvest unit (approximately 5 percent canopy cover left).
   - *Moderate dispersed retention:* a moderate density of trees would be retained across the harvest unit (approximately 25 percent canopy cover left).
   - *Heavy dispersed retention*: a relatively high density of trees would be retained across the harvest unit (approximately 50 percent canopy cover left).

2. **Aggregated Retention,** which is harvest that retains clusters or groups of trees at one of three density levels:
   - *Light aggregated retention*: a relatively low percentage of the unit is retained in unharvested clumps (approximately 5 percent canopy cover left).
   - *Moderate aggregated retention*: a moderate percentage of the unit is retained in unharvested clumps (approximately 25 percent canopy cover left).
   - *Heavy aggregated retention*: a relatively high percentage of the unit is retained in unharvested clumps (approximately 50 percent canopy cover left.

   (*NOTE: Only Unit 202 is proposed for aggregate retention, and it would be at the heavy aggregate retention level*.)

The structure and composition of trees in each proposed harvest unit would determine the amount or percentage of retention. The largest dominant and co-dominant trees would be retained, typically western larch and Douglas-fir. For dispersed retention units, trees would be retained over the entire harvested area, but may not always be uniformly dispersed. Please refer to a more detailed discussion of retention levels in Chapter 3, Vegetation Environmental Consequences.

Hazardous Fuel Treatments. Commercial timber harvest activities typically generate hazardous fuel. A variety of methods can be employed to reduce those fuels. Prescribed fire with understory broadcast burns or slash pile burning are two methods for disposing of slash. In dispersed retention harvest areas, large-diameter fire-resistant trees would be left, and a low-intensity underburn may be prescribed a year or two after harvest. The objective of this treatment is to reduce ladder and ground fuels while protecting the long-lived trees that survived past fires. Where broadcast prescribed fire is not an acceptable method, machine piling of slash and other hazardous fuel would be used. Submerchantable-sized trees would typically be felled or "slashed" and subsequently piled and burned to reduce the amount of ladder fuels in the residual stand.

The units labeled 200 to 203 on the attached map (Figure 1-2) are proposed for prescribed fire without commercial timber removals. Within unit 202.1 (located west of Tally Lake), areas designated as light dispersed retention (LDR) are currently dominated by naturally occurring shrub and grass fields with conifer encroachment. The remainder of unit 202 is forested, and the proposed prescribed fire is expected to only affect up to 30 percent of the area designated as heavy or high aggregated retention (HAR) because the remaining 70 to 90 percent is not expected to burn. The prescribed fire would be conducted on an incremental basis. Therefore, the exact location of the 30 percent is not known at this time. The maximum allowable perimeter (MAP) is displayed on Figure 1-2.

Precommercial Thinning. Some areas of past timber harvest are now growing higher densities of sapling-sized trees than is desirable. We propose to precommercially thin these areas, removing no commercial products because the trees are too small. This process would take place between the years 2004 to 2009. Some of the proposed precommercial thinning is near values (such as buildings, power lines, or critical wildlife habitat) identified as needing protection from wildland fire. Fuels created from the thinning operation would be piled and later burned in these areas.

Summary of Vegetation Treatments in Alternative B, the Proposed Action. Several different vegetation treatments would be applied over about 11,000 acres within the Logan Creek area. Please refer to the Alternative B Proposed Vegetation Treatment Map (Figure 1-2). These treatments would include approximately:

- 6624 acres of commercial timber harvest, which includes salvage harvest. Harvest activities would occur in 143 different units within the project area. Openings would be created using a combination of shelterwood and seed tree harvest methods followed by prescribed burning or excavator site preparation for seedling regeneration. Reserve trees would be left both in clumps and as individual trees. Some units would instead be commercially thinned, leaving the remaining trees dispersed across the stand.

- 566 acres of spring season prescribed underburning of brush fields, forest understory, and other forest vegetation. Some slashing or other pretreatment of forest vegetation may be necessary. This burning would reduce fuel levels, improve habitat for wildlife, and return the forest structure of these areas closer to historical conditions.

- 182 acres of fuels treatment without a commercial timber harvest or underburning. This treatment would reduce fuel levels and return the forest structure of these areas closer to historical conditions. The fuels reduction cannot be accomplished with a commercial timber harvest because too few trees in these stands are large enough to have economic value for wood projects. Brush, small-diameter trees, and much of the existing down and dead fuel would be piled and burned. The work would involve hand tools and chainsaws.

- 3783 acres of precommercial thinning of sapling-sized trees of lodgepole pine, western larch, Douglas-fir, spruce, subalpine fir, and a minor amount of other tree species. Approximately 83 acres of these would have hand piling of slash and subsequent pile burning to reduce the risk of wildland fire. Treatment on these acres would promote the growth and health of the residual young trees in upland areas. These areas were not assigned unit numbers and are not described in tabular form. Please refer to the Proposed Precommercial Thinning Map (Figure 1-3).

Table 1-1. Proposed Action Units for Commercial Timber Harvest.

Unit Number*	Acres	Retention Level***	Treatment Method**	Regeneration Method	Site or Fuel Preparation	Logging System
1	166	MDR	SW w/R	Natural	Excavator pile	Ground based
2	65	HDR	CT	N/A	Excavator pile	Ground based
3	100	MDR	SW w/R	Natural	Excavator pile	Ground based
4	128	MDR	SW w/R	Natural	Excavator pile	Ground based
5	33	HDR	CT	N/A	Excavator pile	Ground based
6	177	MDR	SW w/R	Natural	Excavator pile	Ground based
7A	25	MDR	SW w/R	Natural	Underburn	Skyline
8	104	HDR	CT	N/A	Excavator pile	Ground based
9	18	MDR	SW w/R	Natural	Excavator pile	Ground based
10	13	MDR	SW w/R	Plant	Excavator pile	Ground based
11	80	MDR	SW w/R	Natural	Excavator pile	Ground based
14	201	MDR	SW w/R	Natural	Excavator pile	Ground based
15	79	MDR	SW w/R	Natural	Excavator pile	Ground based
16	53	HDR	CT	N/A	Excavator pile	Ground based
17	64	LDR	ST w/R	Plant	Excavator pile	Ground based
17A	27	LDR	ST w/R	Plant	Underburn	Skyline
18	29	MDR	SW w/R	Plant	Excavator pile	Ground based
19A	70	LDR	ST w/R	Plant	Underburn	Skyline
20	147	LDR	ST w/R	Plant	Underburn	Ground based
21	33	LDR	ST w/R	Natural	Excavator pile	Ground based
23A	11	LDR	ST w/R	Natural	Underburn	Skyline
24	31	LDR	ST w/R	Natural	Underburn	Ground based
25	78	LDR	ST w/R	Natural	Excavator pile	Ground based
26	93	HDR	CT	N/A	Excavator pile	Ground based
27	31	LDR	ST w/R	Plant	Excavator pile	Ground based
28A	28	LDR	ST w/R	Plant	Excavator pile	Skyline
29	33	MDR	SW w/R	Natural	Underburn	Ground based
30	35	LDR	ST w/R	Plant	Underburn	Ground based
31A	14	MDR	SW w/R	Plant	Excavator pile	Skyline
32	123	MDR	SW w/R	Plant	Excavator pile	Ground based
32A	10	MDR	SW w/R	Plant	Underburn	Skyline
33	90	MDR	SW w/R	Natural	½ pile, ½ burn	Ground based
34	24	MDR	SW w/R	Natural	Underburn	Ground based
35	222	MDR	SW w/R	Plant	Excavator pile	Ground based
36	63	MDR	SW w/R	Plant	Excavator pile	Ground based
36A	38	MDR	SW w/R	Plant	Excavator pile	Skyline
38	6	MDR	SW w/R	Natural	Excavator pile	Ground based
38A	9	MDR	SW w/R	Natural	Underburn	Skyline
39	79	HDR	CT	N/A	Excavator pile	Ground based
39A	26	HDR	CT	N/A	Excavator pile	Skyline
39B	17	HDR	CT	N/A	Excavator pile	Skyline
40	52	HDR	CT	N/A	Excavator pile	Ground based
41	14	MDR	SW w/R	Plant	Excavator pile	Ground based
41A	127	MDR	SW w/R	Plant	Excavator pile	STS
42	31	MDR	SW w/R	Natural	Excavator pile	Ground based
43	34	HDR	CT	N/A	Excavator pile	Ground based
44	29	HDR	CT	N/A	Excavator pile	Ground based
45	15	HDR	CT	N/A	Excavator pile	Ground based
46	17	MDR	SW w/R	Plant	Underburn	Ground based
47	53	MDR	SW w/R	Plant	Excavator pile	Ground based
47A	38	MDR	SW w/R	Natural	Underburn	Skyline
48	77	MDR	SW w/R	Plant	Excavator pile	Ground based
48A	7	MDR	SW w/R	Natural	Excavator pile	Skyline

Unit Number*	Acres	Retention Level***	Treatment Method**	Regeneration Method	Site or Fuel Preparation	Logging System
49	28	MDR	SW w/R	Natural	Underburn	Ground based
50	48	MDR	SW w/R	Natural	Excavator pile	Ground based
51	17	MDR	SW w/R	Natural	Underburn	Ground based
52	120	LDR	ST w/R	Plant	Excavator pile	Ground based
53	12	MDR	SW w/R	Natural	Underburn	Ground based
53A	10	MDR	SW w/R	Natural	Underburn	Skyline
54	33	MDR	SW w/R	Plant	Excavator pile	Ground based
55A	148	MDR	SW w/R	Plant	Underburn	Skyline
56	69	MDR	SW w/R	Natural	Excavator pile	Ground based
57	9	LDR	ST w/R	Plant	Underburn	Ground based
58	14	MDR	SW w/R	Plant	Excavator pile	Ground based
59	8	MDR	SW w/R	Plant	Excavator pile	Ground based
60	27	HDR	CT	N/A	Excavator pile	Ground based
61	11	MDR	SW w/R	Plant	Excavator pile	Ground based
62	11	HDR	CT	N/A	Excavator pile	Ground based
63	14	MDR	SW w/R	Plant	Excavator pile	Ground based
64	65	MDR	SW w/R	Plant	Underburn	Ground based
65	68	MDR	SW w/R	Natural	Underburn	Ground based
66A	13	MDR	SW w/R	Natural	Underburn	Skyline
67	39	HDR	CT	N/A	Excavator pile	Ground based
68	9	HDR	CT	N/A	Excavator pile	Ground based
68A	10	HDR	CT	N/A	Excavator pile	Skyline
69	18	MDR	SW w/R	Plant	Excavator pile	Ground based
69A	3	MDR	SW w/R	Plant	Underburn	Skyline
70	45	HDR	CT	N/A	Excavator pile	Ground based
71	73	HDR	SAN/SALV	N/A	Excavator pile	Ground based
71A	12	LDR	ST w/R	Plant	Excavator pile	Skyline
72	43	MDR	SW w/R	Plant	Excavator pile	Ground based
73	49	MDR	SW w/R	Natural	Excavator pile	Ground based
73A	64	MDR	SW w/R	Plant	Excavator pile	STS
74	66	MDR	SW w/R	Plant	Excavator pile	Ground based
74A	20	MDR	SW w/R	Natural	Excavator pile	Skyline
75	17	MDR	SW w/R	Plant	Excavator pile	Ground based
76	30	MDR	SW w/R	Natural	Excavator pile	Ground based
76A	10	MDR	SW w/R	Natural	Excavator pile	Skyline
76B	4	MDR	SW w/R	Plant	Underburn	Skyline
77	13	HDR	CT	N/A	Excavator pile	Ground based
78	10	MDR	SW w/R	Plant	Excavator pile	Ground based
79	13	MDR	SW w/R	Plant	Excavator pile	Ground based
80	18	MDR	SW w/R	Plant	Excavator pile	Ground based
81	55	LDR	ST w/R	Plant	Excavator pile	Ground based
82	70	LDR	ST w/R	Plant	Excavator pile	Ground based
85	17	MDR	SW w/R	Plant	Underburn	Ground based
86	16	HDR	CT	N/A	Excavator pile	Ground based
87	8	HDR	SAN/SALV	N/A	Excavator pile	Ground based
88	83	LDR	ST w/R	Plant	Underburn	Ground based
91	44	MDR	SW w/R	Plant	Excavator pile	Ground based
99	7	LDR	ST w/R	Plant	Excavator pile	Ground based
99A	10	LDR	ST w/R	Plant	Underburn	Skyline
100	62	MDR	SW w/R	Plant	Excavator pile	Ground based
100A	5	MDR	SW w/R	Plant	Excavator pile	Skyline
101	127	MDR	SW w/R	Plant	Excavator pile	Ground based
101A	14	MDR	SW w/R	Plant	Underburn	Skyline

Unit Number*	Acres	Retention Level***	Treatment Method**	Regeneration Method	Site or Fuel Preparation	Logging System
102	9	MDR	SW w/R	Plant	Excavator pile	Ground based
103	42	MDR	SW w/R	Plant	Excavator pile	Ground based
105	18	HDR	CT	N/A	Excavator pile	Ground based
106	18	MDR	SW w/R	Natural	Excavator pile	Ground based
107	24	MDR	SW w/R	Natural	Excavator pile	Ground based
108	51	MDR	SW w/R	Natural	Excavator pile	Ground based
109	116	MDR	SW w/R	Natural	Excavator pile	Ground based
110	25	MDR	SW w/R	Plant	Excavator pile	Ground based
111A	21	MDR	SW w/R	Natural	Underburn	Skyline
112	24	MDR	SW w/R	Natural	Excavator pile	Ground based
112A	36	MDR	SW w/R	Natural	Excavator pile	Skyline
114	44	MDR	SW w/R	Plant	Excavator pile	Ground based
115	48	MDR	SW w/R	Natural	Excavator pile	Ground based
117	68	MDR	SW w/R	Plant	Excavator pile	Ground based
120A	10	MDR	SW w/R	Plant	Underburn	Skyline
124	52	MDR	SW w/R	Plant	Excavator pile	Ground based
124A	48	MDR	SW w/R	Plant	Excavator pile	Skyline
126	25	MDR	SW w/R	Plant	Underburn	Ground based
126A	23	MDR	SW w/R	Plant	Underburn	STS
127	197	MDR	SW w/R	Natural	Excavator pile	Ground based
127A	140	MDR	SW w/R	Natural	Excavator pile	STS
128	52	HDR	CT	N/A	Excavator pile	Ground based
129	20	MDR	SW w/R	Natural	Excavator pile	Ground based
130	11	MDR	SW w/R	Natural	Excavator pile	Ground based
131	18	MDR	SW w/R	Natural	Excavator pile	Ground based
132	17	MDR	SW w/R	Natural	Excavator pile	Ground based
132A	48	MDR	SW w/R	Natural	Underburn	Skyline
133	36	MDR	SW w/R	Plant	Excavator pile	Ground based
134	175	MDR	SW w/R	Natural	Excavator pile	Ground based
135	87	MDR	SW w/R	Natural	Excavator pile	Ground based
136	10	MDR	SW w/R	Plant	Excavator pile	Ground based
136A	31	MDR	SW w/R	Plant	Underburn	Skyline
137	14	MDR	SW w/R	Plant	Excavator pile	Ground based
137A	25	MDR	SW w/R	Plant	Excavator pile	Skyline
138A	20	MDR	SW w/R	Plant	Underburn	Skyline
139	39	HDR	CT	Plant	Excavator pile	Ground based
140	6	HDR	CT	Plant	Excavator pile	Ground based
TOTAL	**6624**					

* Units with an A or B designation indicate a skyline logging system or a skyline tractor swing (STS) system. All other units are ground-based.

**Treatment Method:

SW w/R = Shelterwood-reserve; ST w/R = Seed Tree w/ reserve; CT = Commercial Thin; SAN/SALV = Sanitation/Salvage

***Retention Levels: (please refer to FEIS Chapter 3, Vegetation Affected Environment)

LDR = Light dispersed retention MDR = Moderate dispersed retention

HDR = Heavy dispersed retention HAR = Heavy aggregated retention

Figure 1-2.

This page left blank intentionally.

Figure 1-3.

This page left blank intentionally.

Table 1-2. Prescribed burn units for wildlife habitat improvement and/or fuel reduction, Proposed Action.

Unit Number	Description	Acres	Retention Level
200	Tally Lake	169	HDR
201	Middle Logan Creek	56	HDR
202	Tally Mountain	157	HAR
202.1	Tally Mountain	123	LDR
203	Oettiker Creek	61	HDR
	Total:	566	

Table 1-3. Fuel reduction areas using hand techniques, Proposed Action.

Unit Number	Description	Acres	Retention Level
300	Highland Meadows	157	HDR
301	Reid Creek	23	HDR
302	Ashley Mountain	2	LDR
	Total:	182	

Transportation Management Proposals *(refer to Transportation Plan Map, Figure 1-4)*

Motorized public access within the Logan Creek analysis area now includes 77 miles of road that are open year-round, 33 miles of road open seasonally, and 120 miles of road closed year-round to public motorized use. Open road density on National Forest System lands within the watershed is approximately 1.34 miles per square mile annually during July and August, and about 0.99 miles per square mile during the remainder of the year.

Table 1-4 contains a detailed summary of proposed road construction. New road construction is proposed to allow access to the vegetation treatments described earlier. Forest "system roads" refer to the roads maintained by the Forest Service for current and future use. A temporary road refers to a road constructed for short-term use and is reclaimed soon after the use is completed.

Rehabilitation involves improving roads to meet or exceed Best Management Practices guidelines, a process that generally installs or improves drainage features. Rehabilitation is proposed for roads that we anticipate having heavy traffic.

Road Construction and Improvement

- Approximately 4.4 miles of system road would be built to access harvest units. General specifications of system roads are single lane with turnouts and a five-mile per hour design speed. The roads would be designed to accommodate logging trucks and skyline equipment. Road surfaces would be approximately 14 feet wide. Traffic service would be Level D, and road maintenance will be Maintenance Level 1 (traffic service and maintenance level definitions can be found in the Flathead Forest Plan (USDA Forest Service 1986)). All system road construction would employ Best Management Practices (see Appendix C).

- Approximately 5.4 miles of temporary road would be built; these temporary roads would be reclaimed after use. General specifications of temporary roads are the same as for system roads described above. All temporary road construction would employ Best Management Practices (see Appendix C). Temporary Road 3 to access Unit 24 in Sanko Creek would require construction of a crossing over an intermittent stream. This is the only stream crossing necessary for all proposed road construction.

- Rehabilitation of drainage systems to comply with Best Management Practices (see Appendix C) on approximately 141 miles of system roads. Where logs would be hauled on currently bermed roads that pass through existing old growth habitat, all logs must be left intact wherever possible and replaced across the roadway after hauling is complete. This measure would help to retain downed wood habitat features and continuity of habitats in these old growth stands. This would occur on Road 2904 for 1530 feet where it passes through 811-2-75; Road 2904 for 400 feet where it passes through 811-2-82; Road 2904 for 1400 feet where it passes adjacent to stand 811-2-82; and Road 2913 for 3200 feet where it passes through 819-1-126. A detailed list of roads that would be rehabilitated is found in Exhibit M-1.

- Road maintenance actions consisting of brushing and blading may be needed on some of the haul roads within the project area. Other drainage work such as the placement of drain dips and additional culverts would likely take place. Dust abatement and blading would occur as needed on the main haul routes.

Table 1-4. Proposed Road Construction for the Proposed Action.

Type of Road and Number	Area	Length	Units Accessed
System Roads			
1	Oettiker Creek	2.68	41, 41A, 134
18	Johnson Peak	1.55	North Johnson
22	Johnson Peak	0.14	North Johnson
		Total: 4.37	
Temporary Roads			
1	Highland Meadows	0.72	6, 7A
2	Evers Creek	0.41	15
3	Sanko Creek	0.10	24
5	Reid Creek	0.58	33
6	Reid Creek	0.07	132A
7	Oettiker Creek	0.27	50
9	Bill Creek	0.44	73, 74A
10	Cyclone Creek	0.49	82
13	Meadow Creek	0.61	99, 99A, 100, 100A
14	Evers Creek	0.43	25, 26
15	Evers Creek	0.19	108
16	Meadow Creek	0.53	127, 127A
17	Meadow Creek	0.13	127A
18	Bill Creek	0.46	137, 137A
		Total: 5.43	

Figure 1-4.

This page left blank intentionally.

Road Reclamation

The Proposed Action includes reclamation of approximately 16.2 miles of road to improve water quality and wildlife security within the Logan Creek area. Refer to Table 1-5 for a list and Figure 1-4 for a map of roads planned for reclamation. Most roads to be reclaimed are currently closed to the public by gates or berms. The open roads proposed for reclamation are receiving little or no use as observed by Forest Service personnel. No foreseeable management activities are planned on or near these roads proposed for reclamation. Reclamation of these roads complies with the direction of the 1976 National Forest Management Act.

Reclamation would be done in such a way as to protect water quality by reducing the potential for future sedimentation. Road templates would be left in place to minimize ground disturbance. Some of the reclamation actions that could occur include treatments to reduce existing noxious weeds, removing drainage features that require active maintenance (such as culverts), installs drainage features such as waterbars, and berm construction.

Culvert removals and stream restoration would occur where roads to be reclaimed intersect streams. The number of culverts that need to be removed are yet to be identified; the actual number depends on channel condition, culvert size, distance to culvert from a drivable road, and the amount of vegetation to be disturbed accessing the culvert with machinery. To reduce the amount of ground disturbed, cross-drain culverts would typically not be removed, but waterbars would be placed nearby. The amount of physical altering of the road template from culvert removal or water bar creation would vary according to the sites involved.

Funding for reclamation may be from various resource areas, including transportation system maintenance, wildlife and fisheries enhancement, and Knudsen-Vandenberg (KV) funds from timber sale receipts.

Road reclamation would involve the removal of culverts and the construction of berms, both ground-disturbing activities that have potential for noxious weed establishment. Disturbed sites would be seeded to speed revegetation of native plants and minimize potential for weed establishment. These activity locations would be noted on maintenance inventory plans for monitoring weed establishment. Noxious weed control activities would be consistent with the Flathead National Forest Weed Control Environmental Assessment and Decision Notice.

Some road reclamation would take place on roads that pass through or are adjacent to existing old growth habitat. Where these roads have downed trees laying across the roadway when the reclamation process begins, all logs must be left intact wherever possible and replaced across the roadway after reclamation is complete. This measure would help to retain downed wood habitat features and continuity of habitats in these old growth stands. See Exhibit Q-15 for details of roads that meet these criteria.

Three road segments are currently open to the public yearlong, though receiving little use, and are proposed for reclamation. Two of the segments (Roads 2971 and 9537) are short and allow limited opportunity for resource management or fire suppression. The third segment (Road 10436) is proposed to be reclaimed because it is currently of low standard and provides only limited access to an area that can be reached by other road systems.

Table 1-5. Roads Proposed for Reclamation with the Proposed Action

Road Number	Road Name	Reclaim Miles	Current Status
313	Logan Creek	0.80	Closed yearlong
313N	Pike Logan	1.00	Closed yearlong
313T	Pine Martin	0.50	Closed yearlong
313V	Logan Creek V	0.60	Closed yearlong
2886B	West Pike Creek B	2.70	Closed yearlong
2913	Reid Basin-Lost Creek	1.30	Closed yearlong
2971	Deer Meadows	0.30	*Open yearlong*
5395	That's It	0.10	Not on map (closed)
9502	Sanko Creek	1.00	Closed yearlong – berm
9504	Crow's Neck	0.80	Open Seasonally – brushed in
9506	Old Out House	0.50	Open Seasonally – brushed in
9524	Moose Basin	0.50	Closed yearlong
9537	Sanko Yew	0.40	*Open yearlong*
9538	Cyclone Basin	0.60	Closed yearlong
9583	Logan Knob	0.60	Closed yearlong
9677A	Lower Boundary	0.60	Closed yearlong
9763D	Moose Hollow	0.30	Closed yearlong
9895	Johnson Hill	0.90	Closed yearlong
10360	Sanko Pit	0.70	Not on map (closed)
10436	Mushroom Cap	2.00	*Open yearlong*
	Total Miles:	**16.20**	

Road Restrictions

To improve wildlife security within the Logan Creek watershed, approximately 4.2 miles of roads that are currently open year-round are proposed to be closed year-round to public motorized access. These closures would require installing one new gate and moving the location of another gate. Refer to Table 1-6. Snowmobile access would remain available on these roads from December 1 to May 15.

Table 1-6. Roads Proposed for Change to Yearlong Closure, Proposed Action

Road Number	Road Name	Miles	Current Status
2909	Taylor Creek	3.60	*Open Yearlong*
2909B	Taylor Quarry	0.20	*Open Yearlong*
11258	South Logan	0.40	*Open Yearlong*
	Total Miles:	4.20	

Trail Construction

Trail construction near Tally Lake Campground is proposed to complete a short loop trail. Construction would be an extension of Trail 804 and consist of about 2000 feet of new trail. This proposed trail is shown on Figure 1-4.

Fisheries Habitat Improvement

Several stream segments were identified as having low potential for large woody debris recruitment. These segments all occur where past timber harvest occurred near the streams. Large logs are proposed to be placed and secured in these streams to create improved fisheries habitat. This activity would be conducted on as much as 3.7 miles of stream over 19 stream segments.

The lower reaches of Logan Creek near Round Meadow (T31N, R23W, Section 8) have been identified as having a limited number of large pools. We are proposing to construct larger pools in about five locations to create better fisheries habitat. These pools would be constructed with an excavator by enlarging the pool with the bucket and placing large rocks on the upstream side of the pool. Proposed locations for the large pools and the large woody debris placement are shown on a map in Exhibits F-7 and F-8.

Wildlife Habitat Improvement

Many areas proposed for timber harvest would benefit from shrub planting to supplement naturally occurring browse or hiding cover. This may be implemented if funding is available. Shrub planting would enhance big game forage, feeding and nesting sites for songbirds, and hiding cover values for a wide variety of wildlife species. Shrub planting would usually consist of willow, serviceberry, red-osier dogwood, mountain maple, and/or redstem ceanothus at a density of 100 to 300 plants per acre. Shrub planting would generally take place in those timber harvest units with light to moderate retention levels, generally with sources of water in the vicinity. Post-harvest site conditions and conifer regeneration success would determine which specific areas shrub planting would be conducted; however, the total maximum area to be treated would range from 100 to 500 acres.

Other areas near riparian zones that experienced timber harvesting in the past are proposed for supplemental tree and shrub planting in order to promote browse and cover. This activity would be conducted on as much as 90 total acres adjacent to 19 stream segments. Proposed locations for tree and shrub planting are shown on a map in Exhibit F-8.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action, the other alternatives, and the environmental consequences in order to make the following decisions after the preparation of the Final EIS:

- Should forest restoration activities be implemented in the project area at this time?
- Should road reclamation be implemented?
- Should motorized vehicle access be changed, and if so, which roads should be closed or restricted?
- Does the selected alternative meet the purpose and need for action?
- Does the selected alternative meet laws and regulations governing natural resource management activities?

The Responsible Official may choose any of the alternatives analyzed in this document, including the no-action alternative or some combination of elements of action alternatives, as long as they are within the range of effects of the alternatives that have been analyzed.

Public Involvement

Public participation helps the Forest Service identify concerns about possible effects from its proposals. It is also a means of disclosing to the public the nature and consequences of actions proposed for National Forest System lands.

Public participation began in July 2000 when Tally Lake District Ranger Jane Kollmeyer mailed a letter requesting comments on the Logan Creek watershed-level assessment, described at the beginning of this chapter. In August 2000, she conducted open houses at the Hope Ranch in Star Meadow and the Tally Lake Ranger District office, which provided an opportunity for the public to become familiar with the Logan Creek drainage, possible projects, and to provide general input to the Forest Service's data gathering effort for the assessment. In September 2001, the planning team completed the assessment and published a summary document. This document was mailed to the individuals and groups who previously expressed interest in the findings.

The Logan Creek project first appeared the Forest's Schedule of Proposed Actions (SOPA) in the summer of 2001. This project has appeared quarterly in the SOPA since that issue.

After the assessment recommended several management actions and project-level planning began, a public involvement strategy was developed to ensure that potentially interested members of the public and other government agencies received timely information about the upcoming analysis so they may participate in the process (Exhibit B-1a). The Forest Service developed a list of members of the public and agencies who may be interested in the Logan Creek project. This includes members of the public within these general categories:

- Adjacent landowners or residents
- Tribal governments
- County governments
- Local Congressional representatives
- Advocacy or user-group organizations
- Interested individuals and the general public
- Adjacent National Forests and Ranger Districts
- Other federal agencies
- Montana State agencies
- City governments
- Local economic organizations
- Timber industry groups
- Local news media

A Proposed Action was developed from the management recommendations and data collected in the watershed assessment. In March 2002, the District Ranger mailed the Proposed Action and a letter requesting comments to individuals, groups, and agencies identified from the above list. In addition, a legal notice was published in the *Daily Interlake* requesting comments. Twenty letters and 11 telephone calls were received in response to this mailing. In April 2002, an open house was held at the Tally Lake Ranger District office and was attended by 11 members of the public. In October 2002, a field trip was held and attended by 13 members of the public. The majority of the attendees at the open house and field trip were

private landowners within the project area who were interested in fire prevention and effective fuel reduction in the wildland urban interface.

All comments received were considered, and a decision was made to produce an Environmental Impact Statement as the best level of analysis and documentation for the Logan Creek project. The Notice of Intent (NOI) was published in the Federal Register on August 12, 2002. The NOI asked for public comment on the proposal from August 12 to September 12. The NOI generated two responses. Many of the responses to the proposed action cited scientific literature and requested the Interdisciplinary Team to consider this research. An attempt was made to locate and review this literature if team members were not already familiar with the research referenced and provide it to team specialists. The result of this literature search is displayed in Exhibit C-23.

Comments generated from the Forest Service's request for comments on the proposed action and/or the NOI published in the Federal Register were analyzed using the content analysis process. Content analysis is a systematic process to compile, categorize, and capture the full range of public viewpoints and concerns regarding a plan or project. Content analysis helps the planning team clarify, adjust, or use technical information to prepare the Final EIS. Information from public meetings, letters, emails, faxes, phone calls, and other sources are all included in this analysis. This process makes no attempt to treat comments as votes. Content analysis ensures that every comment is considered at some point in the decision process. The content analysis is presented in Exhibits C-21, C-49, and C-57.

To analyze the input, a list of comments was created. This list identifies specific requests expressed by individuals and groups who responded to the Draft EIS. To develop the list, each letter was read and representative quotations were selected that best capture the respondent's sentiments in the form of an action the Flathead National Forest should consider pursuing. A response from the interdisciplinary team follows each concern. The list of comments to the proposed action from the public and the responses from the IDT are in Exhibit C-65.

A list of agencies, groups, and individuals contacted or consulted throughout the entire public involvement process is in Chapter 4 of this FEIS. Participation with the Salish and Kootenai Tribe was conducted during quarterly meetings between tribal representatives and the Flathead National Forest Heritage Resource specialists.

Using the comments received on the proposed action, the IDT developed a list of issues to address. These issues are discussed in the next section of this chapter.

The DEIS was published in late May 2003 with a 45-day comment period. On May 29, the Tally Lake Ranger District hosted an open house at the Ranger Station in Whitefish to further answer questions and solicit comments about the DEIS. Nine letters, phone calls, or personal visits that focused on the DEIS were received from members of the public or other government agencies. Content analysis as described above was used on the comments received on the DEIS; however, the low number of input letters allowed the Interdisciplinary Team to only create the list of comments and responses without the categorization used in the response to the proposed action. The summary of comments from the public and the

responses from the interdisciplinary team are included in Appendix F of this FEIS. These comments helped develop Alternative F.

A few responses to the DEIS cited scientific literature. An attempt was made to locate and review this literature and provide it to team specialists if team members were not already familiar with the research. The result of this literature search is displayed in Exhibit C-75.

The complete documentation of public participation and media coverage is contained in Exhibit sets B, C, and D.

Issues

An *issue* is defined as a point of discussion, debate, or dispute concerning environmental effects of an action. Issues are identified through the scoping process with the public and by review from other agencies and Forest Service personnel. The scoping process is used not only to identify important environmental issues, but also to identify and eliminate issues that do not pertain to the action, narrowing the scope of the environmental documentation process accordingly. Therefore, impacts are discussed in proportion to their importance.

To identify issues specific to the Logan Creek project, the Interdisciplinary Team studied public comments and information about historical and current conditions within the analysis area. They also reviewed the Flathead National Forest Plan and other site-specific planning documents relevant to the Logan Creek watershed to further develop a list of issues. The Forest Service separated the issues into two groups: key and non-key issues. Key issues were defined as those directly or indirectly caused by implementing the proposed action. Non-key issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of non-key issues and reasons regarding their categorization as non-significant may be found at Exhibit C-21.

As for key issues, the Forest Service identified the following issues during scoping. Alternatives were developed in response to these key issues. The ID team also determined what *"issue indicators"* to use to measure how each alternative responded to identified issues. Each alternative is evaluated in terms of how it addresses issue alternatives (Table 2-13). The key issues are presented and discussed below:

1. Wildlife security

This issue stems from concerns that the various types, amounts, and distribution of timber harvest, prescribed burning, and roaded access would reduce the area's ability to provide wildlife security over the short term (0 to 15 years). Timber harvesting under the Proposed Action would reduce the amount of secure hunting season elk habitat. This habitat could be provided through proposed restrictions on motorized public access on some roads and trails. Another aspect of wildlife security is protection from habitat loss, such as removal of dead

trees and downed logs by firewood cutting. Timber harvest and road access changes could also affect the amount and quality of habitats vulnerable to firewood cutting.

Issue Indicators:

- Percent of analysis area in elk hunting season security area;
- Percent of elk habitat analysis units with less than 30 percent elk hunting season security area;
- Acres made unavailable to elk (>600' from cover);
- Miles per square mile of roads open year-round and in summer;
- Acres of snag habitat vulnerable to loss through firewood cutting.

Background: The analysis of security for large mammals focused on the needs of elk. During hunting season, elk appear to require contiguous hiding cover patches over 250 acres in size and more than a half-mile from open roads (Hillis et al. 1991); this habitat is defined as an elk hunting season security area. It is recommended that at least 30 percent of an elk herd unit should be such secure habitat. About 33 percent of the Logan Creek analysis area functions as elk security habitat, but four of the seven elk habitat analysis units have less than this amount, with one as low as 19 percent. All 12 of the security areas contain roads that are open to motorized use in the summer, some of which close just before hunting season. Some *potential* security areas currently have trails open to motorized use during hunting season; if these trails were closed to motorized access during hunting season, these potential areas would function as elk hunting season security habitat. Both within and beyond security areas, lack of adjacent hiding cover makes some areas of forage unavailable to elk. About 6,000 acres are currently available for firewood cutting.

2. Effects on existing old growth habitat and on late-seral/structural stage forests

Vegetation manipulation activities are proposed in and adjacent to late-seral/structural stage forests. In addition, timber harvest is proposed in some areas that are currently existing old growth habitat, but have extensive bark beetle mortality. The units that are functioning old growth will only be harvested if there is such extensive mortality so as to eliminate them from old growth status. These units will be monitored do determine the amount of beetle infestation and the amount of live trees. Harvest activities would occur if the level of bark beetle activity jeopardizes adjacent stands and only after sufficient snags are provided. Road construction is proposed through existing old growth habitat. The Proposed Action would increase edge effects and possibly further fragment old growth habitat.

Issue Indicators:

- Acres of timber harvest in “uncertain” old growth habitat (harvest would not occur if the areas are still old growth);
- Acres and % of reduction of late seral/structural stage forest;
- Miles of new high-contrast edge along existing old growth habitat;
- Feet of new road through or adjacent to existing old growth habitat.

Background: Older stands, particularly in stand-replacement fire regimes, tend to be of considerable value as wildlife habitat. Conversion from one stand condition to another can be detrimental to some old growth associated species if amounts of their preferred habitat are at

or near threshold levels or dominated by linear patch shapes and limited interconnections (Keller and Anderson 1992). Nearly all of the remaining old growth habitat in the Logan Creek area is highly fragmented and has a considerable amount of edge. The only intact large patches are near the eastern and northwestern shores of Tally Lake and close to Tally Mountain. Harvest or burning in stands adjacent to old growth can remove the buffering edge, exposing wildlife and plants to sun, heat, dryness, and wind; and to some predators, competitors, and parasites. The amount of edge along pole-sized and mature forest is extensive**.** The occurrence of roads can cause significant edge effects on forested stands, sometimes more than the harvest areas they access (Reed et al. 1996). Some of the current old growth habitat has large numbers of large trees now infested with Douglas-fir beetles. These areas will be monitored to determine whether or not they will continue to function as old growth habitat. If it is determined that, after providing for snags, the stand no longer functions as old growth habitat and it presents a risk of mortality to adjacent stands, it may be treated to reduce or eliminate that risk.

3. Landscape patterns--Connectivity

The Proposed Action would sever or constrict forested connections in numerous places that serve as wildlife travel corridors between important habitats such as riparian forests and ridgelines.

Issue Indicators:

- Number of major forested connections severed by timber harvest;
- Number of severed connections along ridgelines;
- Number of forested riparian connections narrowed to less than 300 feet.

Background: Forested cover is needed by many wildlife species that use the analysis area, such as Canada lynx or fisher, to travel between important habitat such as riparian forests and ridgelines, or for travel from one patch of old growth habitat to another. Many other species are not as dependent on forested connectivity, but it better enables them to make use of available habitat, with less chance of disturbance or displacement due to the presence of humans or predatory wildlife.

4. Landscape patterns--Seral/structural stage patch size and shapes

The Proposed Action would decrease the size and continuity of some late-seral/structural stage patches while increasing the amount of edge on others. Based on the ecosystem and landscape objectives it would be advantageous to increase average patch size of all seral stages as well as increase perimeter and reduce the total number of patches. Increasing early-seral/structural stage patch size would, in many places, require reducing or further fragmenting late-seral/structural stage habitat.

Issue Indicators:

- Late, mid-, and early seral/structural stage mean patch size and number of patches.

Background: A late-seral/structural stage patch is an area of ecosystem development from approximately 80 to 120 years old. Forested stands contain trees that generally average 12 to 16 inches in diameter at four and a half feet above the ground (DBH). Although there are

some relatively homogenous areas, most of the late-seral/structural stage stands are highly fragmented. Most blocky areas of mature forests enclose numerous small regeneration harvests in cookie-cutter fashion.

5. Water quantity and fine sediment deposition

WATSED, the model used to predict water yields and peak flows for this project, shows that some drainages in the assessment area (Reid, Pike, Bill, and Cyclone) have, or have recently had, elevated water yields or peak flows. Data collected in the field confirm there is a high potential that past management activities may be affecting channel stability. The Proposed Action includes additional timber harvest and involves road construction as well as road reclamation, and maintenance within the Logan Creek drainage. Both ground-based timber harvest and road work have potential to cause at least short-term increases in water yields, peak flows, sediment delivered to streams. In extreme cases, these activities could lead to changes in channel stability, especially if activities occur on sensitive landtypes or in drainages where activities occur have stream types that are sensitive to additional water or fine sediment.

Issue Indicators:

- Percent of past and proposed timber harvest in each of the four drainages where field data suggests they may be currently experiencing unstable conditions;
- Miles per square mile of roads in each of the four drainages that may be capable of contributing additional sediment or water;
- Peak flow increases (WATSED modeling) for each of the four drainages mentioned above.

Background: Ground-disturbing activities, such as timber harvest and road building, have the potential to increase water yield, peak flow, and fine sediment to streams in watersheds where these activities occur. Increasing drainage structures and correcting drainage problems on system roads are aimed at reducing the amount of water routed directly to streams during rain events and snow melt. These same changes in drainage along roads are focused on decreasing the amount of sediment routed to streams.

6. Road Access

There is concern that reclaiming existing roads would reduce future management opportunities, reduce access for fire suppression, and reduce access for public recreation. Another perspective is that the Proposed Action does not reduce enough road miles to maintain wildlife security, improve water quality, and reduce the risk of human-caused ignition of fires.

Issue Indicators:

- Net change in miles of road available for recreational access year-round;
- Net change in miles of road available for recreational access seasonally (July 1 to August 31);
- Net change in miles of road available for management and fire suppression activities;
- Percent of drivable roads that are open to public motorized use.

Background: Nearly all roads proposed for reclamation are not presently drivable due to the presence of berms and/or vegetation. A few of the roads proposed for reclamation have culverts that would need to be removed. Proposed reclamation leaves the road prism in place in case it ever needs to be recommissioned. None of the roads proposed for seasonal or year-round closure to motorized public use access private property.

Scope of the Analysis

The proposed action is limited to the specific timber harvest, fuel treatments, reforestation activities, and road closures on National Forest System land in the Logan Creek analysis area, although the geographic extent of some areas used to analyze different components (watershed, old growth, and wildlife home ranges) may extend beyond the analysis area.

The analysis of effects disclosed in this document includes those occurring from the entire "scope" of the decision. Scope is defined in 40 CFR 1508.25 as the range of actions, alternatives, and impacts to be considered in an environmental impact statement. Any new information that develops after the Decision is made would be considered prior to implementation.

Types of Actions Analyzed

Connected Actions are those actions that are closely related and therefore should be discussed in the same environmental impact statement. Actions are connected if they:

- automatically trigger other actions which may require environmental analysis,
- cannot or will not proceed unless other actions are taken previously or simultaneously, or
- are independent parts of a larger action and depend on the larger actions for their justification.

The Proposed Action includes those activities necessary to fulfill the identified Purpose and Need as well as all connected actions identified in the alternatives described in Chapter 2. Connected actions include:

- √ Post-timber-sale activities (such as slash piling for hazard reduction and revegetation of disturbed areas), watershed Best Management Practices, and design criteria described in the alternatives.
- √ Noxious weed control as outlined in the Flathead National Forest Noxious and Invasive Weed Control Environmental Assessment and Decision Notice will take place in the analysis area.

Cumulative Actions are those actions, which when viewed with past actions, other present actions, and reasonably foreseeable actions, may have cumulatively significant impacts and therefore should be discussed in the same environmental analysis document. Past, present, and reasonably foreseeable actions are activities that have already occurred, are currently occurring, or are likely to occur in the vicinity of the project area and may contribute cumulative effects. The past and present activities and natural events have contributed to

creating the existing condition, as described in the Affected Environment sections of Chapter 3. These activities, as well as reasonably foreseeable activities, may produce environmental effects on issues or resources relevant to the proposal. Therefore, the past, present, and reasonably foreseeable activities have been considered in the cumulative effects analysis for each resource area.

- Past, Present, *and* Reasonably Foreseeable Actions:

  √ Grazing – The Chinook Lake allotment is partially located in the Logan Creek project area. Cattle have been grazed on this allotment for many years and will be permitted in the future. Grazing will continue to also occur on private land.
  √ Private Land Development – The construction of roads and buildings on private land has been occurring for decades and will continue. The rate of development on private land has been recently increasing.
  √ Wildland Fire Suppression – Since about 1940, wildland fires have been actively suppressed by the Forest Service and State of Montana. These agencies will continue to suppress wildland fire.
  √ Noxious Weed Treatment – Weed treatments have been conducted by the Forest Service, Flathead County, and private citizens for many years. This activity will continue.
  √ Hunting, Fishing, Trapping – These activities have been and continue to be one of the most popular uses of National Forest System land.
  √ Firewood and Other Miscellaneous Forest Product Gathering – Other products include posts and poles, mushrooms, and Christmas trees.
  √ Snowmobiling – This activity will continue to occur. Snowmobiling is not as popular on the Tally Lake Ranger District as other parts of the Forest.
  √ Camping/Boating – Tally Lake Campground will continue to be one of the most popular campgrounds on the Forest. Tally Lake will continue to receive a substantial amount of recreational boat use. Dispersed camping is less popular but will continue.
  √ Driving, Motorized Trail Riding – Driving and sightseeing on open Forest roads will continue. Many trails in the project area have been and will continue to be open to motorcycles.
  √ Mountain Biking – This activity has occurred and will continue to occur on both trails and roadways.
  √ Hiking – Trails and roads provide quality hiking experiences.
  √ Road Maintenance – Roads open for motorized use by the public are maintained for safe travel. Some roads have been closed and are no longer maintained.
  √ Trail Maintenance – Volunteers annually perform much of the trail maintenance on the Tally Lake Ranger District.

- Past Actions only:

  √ Timber Harvest – Many thousands of acres of timber has been harvested on federal, state, and private land since early in the last century. This harvesting has ranged from individual tree removals to complete clearcuts. The vast majority of these acres have regenerated into new forests.

- √ Road Construction – Several hundred miles of road have been built on federal, state, and private land since the beginning of the last century.
- √ Trail Construction— About 2500 feet of new trail near the confluence of Cyclone and Logan Creeks was constructed in 2003. This trail construction included a new bridge over Meadow Creek and a new ford over Logan Creek. Nearly all other trail construction in the Logan Creek area took place prior to 1990.
- √ Precommercial Thinning – About 4300 acres of sapling-sized stands have been thinned since the 1960s. Some of these stands originated from wildland fire and others from timber harvest activities.
- √ Fish Stocking – The streams and lakes of the project area have been stocked with non-native species of fish, most notably brook trout, for recreational purposes.
- √ Wildland Fire – There is evidence of extensive wildland fire in the project area over the last several hundred years; however, very few wildland fires have burned more than a few acres at a time since active suppression was implemented about 1940.
- √ Predator Control – Some predators, especially wolves, were eradicated from the Logan Creek area in the early part of the last century.
- √ Beaver Control – Trapping of beavers and destruction of beaver dams occurred up to the 1990s.

- Present Actions only:

  - √ Precommercial Thinning – A decision has been made to thin 319 acres in the Logan Creek area. All of this thinning should be accomplished by the beginning of November 2004.
  - √ Round Meadow Cross Country Ski Area Improvements – A decision has been made to reconstruct 2.5 miles of cross-country ski trail. In addition, new construction of 1.5 miles of mountain biking trails in the existing ski trail corridors has been approved.

- Reasonably Foreseeable Actions only:

  - √ Timber Harvest - Plum Creek Timber Company is planning to harvest timber on their property in the southern part of the Logan Creek analysis area over the next several years. Their proposal includes about 850 acres in eight different units of timber harvest treatments using the seed tree or shelterwood method (LAR or MDR). All roads needed for the proposed removals are currently in place. Plum Creek's proposed timber harvests are anticipated to be completed by 2005.
  - √ Temporary Road Openings - Short-term (less than three months), one-time opening of roads closed yearlong to public access for the purpose of firewood gathering. Which roads would be opened in what years is not known at this time.

Similar Actions are actions that have enough similarity in timing or geography as the Proposed Action that the effects of these similar actions should be considered in the same environmental analysis as the Proposed Action and its alternatives. This Proposed Action does not have any similar actions.

Types Of Impacts Analyzed

The scope of the analysis includes consideration of three types of effects: *direct*, *indirect*, and *cumulative;* they are disclosed in Chapter 3 by resource affected. The definitions of these impacts or effects are contained in 40 CFR 1508.7 and 40 CFR 1508.8 and are restated below:

Direct Effects are caused by the action and occur at the same time and place as the triggering action. Direct effects of the alternatives will be analyzed for the resources affected by the alternatives.

Indirect Effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects of the alternatives will be analyzed for resources affected by the alternatives.

Cumulative Effects are the impacts on the environment that result from the incremental impact (direct and indirect effects) of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7).

The scope of the analysis also includes the consideration of the no-action alternative and other reasonable alternatives as required in 40 CFR 1508.25(b). These alternatives are discussed in more detail in Chapter 2.

This page left blank intentionally.